Enough laws, we are told, close a situation, but it seems that we have never found enough laws in the whole history of thinking to close any question. About the time we get settled to a transaction of business, a Copernicus or a Darwin steps in and destroys all the old stock in trade.

In Part III. we have theory defined—''the conditions without which a certain law, or set of laws, could not even be possibly true. It is *this* that is as true as a fact. If we attempt to carry this definition into any concrete case of science, we are in the predicament of having so much on our hands that we can do nothing with any of it. If we were called upon for the conditions without which the laws of color vision, for example, could not even be possibly true, we might give answers running in scope all the way from Mexican revolution to the existence of God—either, the sun, a nervous system, stimulus, retina, and a thousand of other things, the absence of any one of which would spoil the whole performance. That which is as true as fact turns out to be so general that it covers all particulars and consequently gives us no clue to a determination of any one.

<div align="right">H. E. CUNNINGHAM.</div>

LEBANON, OHIO.

REVIEWS AND ABSTRACTS OF LITERATURE

Hauptwerke der Philosophie in originalgetreuen Neudrucken. Band V. *System der Logik.* JACOB FRIEDRICH FRIES. Durchgesehen und mit gänzlich neu bearbeitetem Namen und Sachregister herausgegeben von der Jakob Friedrich Fries Gesellschaft. Leipzig: Verlag von Felix Meiner. 1914. Pp. xx + 454.

Of late it has been frequently noted that contemporaneous philosophic thought consists very largely of the revival, in more or less fragmentary fashion, of classic philosophies. We have current disciplines derived from Kant, Fichte, Hegel, and Reid, and the recent publication of the second series of the *Abhandlungen der Friesschen Schule* attests the fact that interest has been renewed in the philosophy of Fries. Since Fries's logic incorporates a considerable portion of his philosophy,[1] a reprint of his treatise on logic will be welcomed; and perhaps an added interest is due to the criticisms of Fries in the volume of Bolzano's *Wissenschaftslehre* reprinted as Volume IV. in the preceding series.

Fries's position, which has been described as empirical idealism, is perhaps most easily penetrated by inquiring into his concept of science. A whole of knowledge, ordered and complete with regard to the subordination of the particular under the general (§§ 19, 66) is

---

[1] *Cf.* Walter Mechler, *Kant Studien, Erganzungshefte* No. 22.

called, with reference to its form, a system and with reference to its matter, a science (p. 206). Such a whole consists of principles or supreme universals, that is, *fundamenta.* Scientific knowledge, then, is a system of principles. The doctrine of the whole of knowledge in its relation to the scientific whole is developed in Sections 78, 79.[2] In Section 111 Fries classifies sciences with respect to certainty, attributing the same objective validity[3] to assertory cognitions of empirical facts and apodictic cognitions of general laws.[4] Thus, narrative sciences such as history and descriptions of nature possess the same complete certainty as mathematics and philosophy; discursive sciences such as psychology and experimental physics are less certain, being dependent upon probabilities (pp. 372, 246–249). With this classification it is natural for Fries to associate a theory[5] of probability[6] including mathematical probability (§§ 100–102) and philosophic probability (§§ 103–105) and error (§§ 106–110). In Section 113 Fries discusses the reduction of knowledge to principles. In particular, he points out that immediate knowledge is the constitutive principle of a science as distinguished from the logical and the anthropological. To illustrate, the constitutive principle of pure mathematics is pure perception, *e. g.,* in geometry, the perception of infinite space; the anthropological principle is the productive imagination[7] as the faculty of mathematical perception. The logical principle of a mathematical discipline consists of its fundamental concepts, axioms, and definitions. The simplest (pp. 208, 209) and most evident (p. 241) principles are the mathematical (p. 410). Fries's discrimination (p. 316) between knowledge as completely certain and knowledge as dependent upon probabilities is precisely his distinction between the immediate cognitions of reason and the mediate cognitions of the understanding which, as he explicitly states (p. 259) is of a generality unknown to Kant.

Fries's concept of logic is determined by a formal subdivision (p. 248). Sciences of reason are divided into mathematics and philosophy; these may be either pure or applied. Philosophy is the science of mere concepts; mathematics is the science of the construction of concepts in pure perception. Corresponding to Kant's analytic and synthetic judgments (pp. viii, ix) philosophy is subdivided into logic and metaphysics. This distinction is explained in

---

2 *Cf.* pp. 230, 370, 373, 374.

3 *Cf.* p. 243.

4 *Cf.* pp. 244, 245.

5 *Cf.* J. F. Fries, *Versuch einer Kritik der Prinzipien der Wahrscheinlichkeitsrechnung.* Braunschweig, 1842.

6 Part II., Chapter III.

7 *Cf.* pp. 45, 46.

pages 129–132. Logic is the science of concepts springing from reflection; metaphysics is the science of concepts springing from immediate pure reason. Logic is either pure or applied. The pure is subdivided into the demonstrative (formal, philosophical) and the anthropological (historical). The formal logic is dependent upon the anthropological (pp. x, xi). Fries maintains, in opposition to Kant, that it is quite impossible to set up formal logic apart from the anthropological (pp. 4, 5) and consequently he would hold that formal logic in its more highly specialized form, namely, the algebra of logic of Boole, Peirce, Schroeder must remain artificial and one-sided. One recalls here Windelband's criticism[8] of Boole's *Laws of Thought.* Following the preceding classification, Fries discusses anthropological logic (pp. 24–125), philosophical logic (pp. 129–221), and applied logic (pp. 240–449). The part devoted to applied logic is divided into three sections; these deal, respectively, with the relation of thought to knowledge, the elucidation of knowledge, and the theory of method. The doctrine of method is intended to amplify the theory of Kant (p. vii); whereas in the first part of the applied logic the theory of feeling of Jacobi is adapted.

The principal question of logic according to Fries is: ''What are concepts, judgments, inferences, system?'' To answer this question Fries develops a theory of representations (ideas) and their abstraction and comparison. This exposition is highly psychological. He describes a representation as an activity of mind which belongs to knowledge (cognition). It will be quite impossible to proceed with Fries's classification of representations without devoting an excursus to Fries's theory of cognition, especially the doctrine of the upper and lower currents of thought, which is fundamental for his entire development.[9] The inner stream of thought (p. 52) consists of two currents. The upper or voluntary current is determined by reflection; the lower or involuntary current is determined by association. The faculty of reflection is the understanding; the sole function of the latter is the repetition of that which is given by reason (p. 132). Somewhat differently expressed, the purpose of thought (p. 54) is to bring back to consciousness cognitions we have ''in us,'' that is, the essence of thought is the repetition of cognitions given by the reason. Contrasted with the preceding faculties of knowledge (association and reflection) are the immediate faculties of cognition, namely, the pure consciousness of self, mathematical perception, and pure reason in a restricted sense (§ 11). Self-cognition presupposes the entire

---

[8] W. Windelband, *A History of Philosophy.* Translated by J. H. Tufts (second edition), pp. 629, 639. Windelband's remark is somewhat analogous to Matthew Arnold's view of mathematics as contrasted with ''fresh learning.''

[9] § 19; *cf.* pp. 127, 259, 269, 275, 316, 341, 370, *etc.*

content of "our" knowledge (pp. 240, 241) and is identified with consciousness (p. 38); it is the pure consciousness of self qualified by the sense-perception of the inner sense (p. 39). The reason is the source of the sense-perceptions and consequently of empirical knowledge and as pure reason is the source of the apodictic laws of mathematics and philosophy (pp. 421, 258). The reason is the immediate spontaneity of knowledge; the faculty of reflection is mediate. On this assumption Fries bases his distinction between perceptual and conceptual knowledge (pp. 63–66). Abstraction[10] and comparison, corresponding to the lower and upper currents of thought are associational and reflective, as is also relation.[11]

Fries's classification of representations may now be set forth. Every representation has a dual aspect: subjective, *i. e.*, the act of representing, and objective, *i. e.*, that which is represented (p. 25). With regard to their objective aspect representations are either problematic (mediate) or assertory (immediate). The object[12] is the individual determined by an assertory representation; *e. g.*, "a triangle," "this triangle," "every triangle" denote objects, but not "triangle" which is a general representation (§ 22, p. 271). Subjectively, representations are either dark or clear (§ 9, p. 35). The immediately clear are called perceptions and the mediately clear are called conceptions (p. 64). Conceptual representations, in turn, are either dark, clear, or lucid (§ 23). The source of clear representations is threefold: sense-perception, mathematical perception, pure reason.[13] Underlying mathematical perceptions are representations of space and time (§ 16) and at the basis of the representations of pure reason are the representations of synthetic and analytic unity which spring from the spontaneity of reason (p. 69). The abode of the dark representations appears to be the lower current of thought.[14] The term "latent" seems preferable to Fries's "dark"; presumably Fries means by dark representations those which are not explicitly recognized. Between the immediately clear and mediately clear representations are the esthetically lucid representations based on feeling.[15]

In Fries's classification of representations, it must be confessed, there is much that is unnecessarily psychological and burdened with difficulties analogous to those attached to the "inner sense," "understanding," and "pure reason" of Kant. Genetically, Fries's

[10] *Cf.* Meinong, "Abstrahieren und Vergleichen," *Zeitschr. für Psychologie und Physiologie der Sinnesorgane*, Vol. XXIV., p. 72.

[11] Pp. 48, 67, 74, 87, 88, 113.

[12] Pp. 27, 55, 276, 371; §§ 29, 37.

[13] Pp. 53, 54, 242.

[14] *Cf.* pp. 42, 43, 268, 269, 276.

[15] §§ 80–82; p. 273.

discussion seems inadequate; for his development of a clear representation from a dark one is not evolutionary; representations, clear or dark, are ''in us''; a dark representation is merely one that is not perceived by the inner sense (pp. 38, 40). This position in its non-creative aspect seems Platonic. The preceding defect of Fries is further emphasized by his concepts of new and invented representations. The former ''penetrate us'' favored by sense-stimulation (p. 40); the latter are merely variously ordered repetitions of given representations, *i. e.*, are combinatory[16] in a mathematical sense.[17]

The domain of a representation is applied by Fries only to concepts. The latter are classified (§§ 20, 26) with regard to ''magnitude'' (p. 76) which is either intensive or extensive. The intensive magnitude of a concept is called the content (*Inhalt*) and the extension of a concept is called the domain (*Umfang, Sphäre*). The form of the domain of concept is of mathematical origin.[18] With regard to the domain of a representation a very marked and valuable advance over Fries was made by Bolzano.

In the gradation of the clearness of representations reference was made to feeling. The distinction between feeling and concept Fries regards as one of the most important in philosophy; their confusion has resulted in mysticism.[19] The concept as a mediate representation is dependent on perception and feeling. Feeling is one of the activities of the faculty of judging.[20] In Section 84 a doctrine of truth-feeling is developed; three kinds of feeling are mentioned, two of which are not subject to error (p. 341) and are immediate, unanalyzable. The mediate truth-feelings are mainly the expressions of practical tact and conscience and are analyzable into inferences; here again reference is made to the upper and lower currents of thought (§ 19). It seems worth while to recall here the *dunkles Vorgefühl* mentioned by H. Grassmann in the philosophical introduction to his *Ausdehnungslehre*.

In an elaborate discussion of error (pp. 340–369) Fries holds that the immediate cognitions of reason are free from error; that error in logic consists of erroneous judgments[21] and thus depends upon (incomplete) inferences of probability (p. 316). In Section 109, which is devoted to paralogisms, Fries remarks: ''Important explicit rules for avoiding these mistakes can not, in general, be given.'' Cer-

[16] This seems to be the ordinary chess-board theory of mathematical novelty; *Cf.* W. F. Meyer, ''Kant und das Wesen des Neuen in der Mathematik,'' *Archiv der Mathematik und Physik*, Vol. 8, 1905, p. 287.

[17] Pp. 46, 62, 70, 72, 409.

[18] P. 385; *cf.* p. 246.

[19] Pp. 241, 363, 379.

[20] § 82; *cf.* p. 321.

[21] *Cf.* p. 341: ''dark inferences.''

tainly, since Fries's time, a remarkable advance has been made through the work of Zermelo[22] and Russell,[23] who have constructed theories for the evasion, at least, of antinomies.

Representations may possess truth, for in the earlier part of his treatise (p. 26) Fries states that the objective validity or truth of assertory representations consists in the agreement of the being of things with their representation. In Section 94, however, this explanation is pointed out as useless for logical purposes. The truth of assertory or empirical knowledge (§ 77) is the agreement (pp. 308, 309) of mediate with immediate knowledge. The real truth of judgments is distinguished (§ 42) from the formal truth or consistence of representations. Elsewhere[24] Fries says that the truth is judgments is conformability to law in "holding-to-be-true."[25] Independent of the truth of logic is the truth of reason, which consists of the agreement of knowledge with its object. The apodictic cognitions are subjectively universally valid (pp. 243, 372); empirical knowledge is subjectively contingent, since its objects vary with the individuals.

The designation of representations by means of symbols forms the subject of an instructive chapter (pp. 277–297). Fries carefully points out that in philosophy the notations are the ordinary signs of language, namely, words, and that attempts, *e. g.*, by Leibnitz, Wolf, and Schelling, to designate philosophic knowledge by means of schematized representations analogous to the mathematical are doomed to fail. This reminds one of the mathematicians' lack of appreciation of the verbal technique of philosophers.[26]

Plainly, the nucleus of Fries's development is found in the opposition "mediacy" and "immediacy"; this is applied to clearness (§ 5), faculties of cognition (§ 11), representations (§§ 19, 22), synthesis (p. 85), cognitions *a priori* (p. 245), faculty of judging (p. 269), symbolic representations (p. 284), *etc.* The preceding opposition is, of course, of interest at the present time.

Fries is[27] an initiator of critical mathematics. In a recent address Fries's mathematical notions have been summarized by

---

22 *Mathematische Annalen,* Vol. 65, p. 261.

23 *Principia Mathematica,* Vol. I., p. 63; *American Journal of Mathematics,* Vol. 30, p. 222.

24 § 106, p. 340.

25 *Cf.* pp. 93, 118–119, 319.

26 See, for instance, E. Study, *Die Realistiche Weltansicht und die Lehre vom Raum,* p. 22; Bergson, *Revue de Mét. et de Morale,* Vol. 16, p. 32.

27 *Cf.* G. Hessenberg, *Sitzb. der Berl. Math. Ges.,* Vol. 3 (1903), pp. 21–28. This mathematician is one of the editors of the present series of the *Abhandlungen der Friesschen Schule;* the well-known mathematician Schlömilch was one of the editors of the former series.

the mathematician L. Koenigsberger.[28] Remarks on mathematics are closely woven into Fries's exposition of logic, no doubt in attempted conformity with the dictum that "an uncompromising mathematical spirit is the only preparation for the entrance of correct philosophy" which "has to do with the nature of things" (§ 40). Apparently Fries conceives of mathematics peculiarly as a science of quantity,[29] an interpretation which has been rejected by Boole and more recently by others,[30] such as Russell. Fries describes the philosophy of mathematics as an inquiry into the significance of mathematical knowledge in the whole of "our" convictions (§ 99 and p. 378). Harmonizing with Fries's remark[31] that errors are sometimes made in philosophy and mathematics, two mistakes in his treatise must be mentioned. The Kantian doctrine that there is only one space and one time is endorsed, although Fries rejects (p. 58) Kant's definition of time as the form of the inner sense. The Kantian theory of space has been widely rejected[32] and even the neo-Kantian restriction of Kant's space to the Euclidean seems inadequate. What seems to be the proper modification of Kant's space is suggested by the fragmentary conceptual space[33] which underlies the Euclidean, Lobatcheffskian and Riemannian spaces. A second error is Fries's confusion (p. 78) of continuity (see pp. 374, 375, 233) in a mathematical sense with density. This problem has, of course, since been solved by Dedekind, Cantor, Weierstrass in Germany and J. Tannery[34] and Méray in France.

ARTHUR R. SCHWEITZER.

CHICAGO

Advertising and its Mental Laws. HENRY FOSTER ADAMS. New York: The Macmillan Company. 1916. Pp. 333.

The psychology of advertising can thank Mr. Adams for a book containing new determinations of fact in surprising abundance. Experiments are given which are methodically correct and, for the most part, statistically sound, to show the number of items which can instantly be apprehended on a page; that the upper and left-hand part of a page is the first to be seen, and is best remembered; that attention is arrested by size almost in proportion to the size; that each

[28] *Sitzungsberichte der Heidelberger Akad. der Wiss.*, II.A, 1911, No. 9.

[29] See pp. 63, 409, 410.

[30] On the other hand, these more modern authors have phrased their definitions of mathematics too broadly, ignoring the necessary *numerical reference* (mediate or immediate) of mathematical conceptions.

[31] *Cf.* pp. 319, 372.

[32] See E. Study, *loc. cit.*, p. 68; O. Hölder, *Anschauung und Denken in der Geometrie*, pp. 3, 26.

[33] This JOURNAL, Vol. 11, p. 173.

[34] In the first edition of his *Theory of Functions of a Real Variable.*